

What is claimed is:

**1. A light-emitting semiconductor device comprising:
a first reflection film to reflect light with a wavelength**

5 λ ;

**a light emitting layer formed on said first reflection film,
said light-emitting layer being injected with electric current to
emit light with a wavelength of about λ ;**

10 **a second reflection film formed on said light-emitting
layer to reflect the light with the wavelength λ , said second
reflection film being provided with a periodical structure
alternately stacked with a first semiconductor layer and a second
semiconductor layer, wherein a reflectivity with respect to the light
with the wavelength λ of said second reflection film is lower than
15 that of said first reflection film;**

20 **an electric current spreading layer formed on said
second reflection film to transmit the light with the wavelength λ ,
said electric current spreading layer being the same electronic
conduction type as said second reflection film and having not less
than half of a thickness of said second reflection film;**

**a contact layer formed on said electric current spreading
layer, said contact layer being the same electronic conduction type
as said second reflection film; and**

25 **a high resistance region formed in a part of said second
reflection film.**

2. A light-emitting semiconductor device according to
Claim 1, wherein said light-emitting semiconductor device is
capable of operating at a speed of not less than 500 Mbps.

5 3. A light-emitting semiconductor device according to
Claim 1, wherein said first semiconductor is made of a III-V group
compound semiconductor and said second semiconductor is made of
a III-V group compound semiconductor in which a V group element
is common with that of said first semiconductor.

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4. A light-emitting semiconductor device according to
Claim 2, wherein said first semiconductor is made of a III-V group
compound semiconductor and said second semiconductor is made of
a III-V group compound semiconductor in which a V group element
15 is common with that of said first semiconductor.

5. A light-emitting semiconductor device according to
Claim 1, wherein said first semiconductor is made of $Al_jGa_{1-j}As$, ($0 \leq j \leq 1$), and said second semiconductor is made of $Al_kGa_{1-k}As$, ($j < k \leq 1$), and said electric current spreading layer is made of $Al_zGa_{1-z}As$,
20 ($0 \leq z \leq 1$).

6. A light-emitting semiconductor device according to
Claim 2, wherein said first semiconductor is made of $Al_jGa_{1-j}As$, ($0 \leq j \leq 1$), and said second semiconductor is made of $Al_kGa_{1-k}As$, ($j < k \leq 1$), and said electric current spreading layer is made of $Al_zGa_{1-z}As$,

(0 ≤ z ≤ 1).

7. A light-emitting semiconductor device according to
Claim 3, wherein said first semiconductor is made of Al_jGa_{1-j}As, (0
5 ≤ j), and said second semiconductor is made of Al_kGa_{1-k}As, (j < k ≤
1), and said electric current spreading layer is made of Al_zGa_{1-z}As,
(0 ≤ z ≤ 1).

8. A light-emitting semiconductor device according to
10 Claim 4, wherein said first semiconductor is made of Al_jGa_{1-j}As, (0
≤ j), and said second semiconductor is made of Al_kGa_{1-k}As, (j < k ≤
1), and said electric current spreading layer is made of Al_zGa_{1-z}As,
(0 ≤ z ≤ 1).

15 9. A light-emitting semiconductor device according to
Claim 1, wherein said second reflection film is made of a III-V
group compound semiconductor in which an average Al composition
is not less than 0.4 and said electric current spreading layer is
made of a III-V group compound semiconductor in which an Al
20 composition is not less than 0.2.

10. A light-emitting semiconductor device according to
Claim 2, wherein said second reflection film is made of a III-V
group compound semiconductor in which an average Al composition
25 is not less than 0.4 and said electric current spreading layer is
made of a III-V group compound semiconductor in which an Al

composition is not less than 0.2.

11. A light-emitting semiconductor device according to
Claim 9, wherein said first semiconductor is made of $\text{Al}_j\text{Ga}_{1-j}\text{As}$, ($0 \leq j$), and said second semiconductor is made of $\text{Al}_k\text{Ga}_{1-k}\text{As}$, ($j < k \leq 1$), and said electric current spreading layer is made of $\text{In}_d(\text{Ga}_{1-c}\text{Al}_c)_{1-d}\text{P}$, ($0 < c \leq 1$, $0 \leq d < 1$).

10 12. A light-emitting semiconductor device according to
Claim 10, wherein said first semiconductor is made of $\text{Al}_j\text{Ga}_{1-j}\text{As}$, ($0 \leq j$), and said second semiconductor is made of $\text{Al}_k\text{Ga}_{1-k}\text{As}$, ($j < k \leq 1$), and said electric current spreading layer is made of $\text{In}_d(\text{Ga}_{1-c}\text{Al}_c)_{1-d}\text{P}$, ($0 < c \leq 1$, $0 \leq d < 1$).

15 13. A light-emitting semiconductor device according to
Claim 1, wherein the number of stacked pairs of said first and
second semiconductors ranges from 4 to 12.

20 14. A light-emitting semiconductor device according to
Claim 3, wherein the number of stacked pairs of said first and
second semiconductors ranges from 4 to 12.

25 15. A light-emitting semiconductor device according to
Claim 5, wherein the number of stacked pairs of said first and
second semiconductors ranges from 4 to 12.

**16. A light-emitting semiconductor device according to
Claim 7, wherein the number of stacked pairs of said first and
second semiconductors ranges from 4 to 12.**

5 **17. A light-emitting semiconductor device according to
Claim 9, wherein the number of stacked pairs of said first and
second semiconductors ranges from 4 to 12.**

10 **18. A light-emitting semiconductor device according to
Claim 11, wherein the number of stacked pairs of said first and
second semiconductors ranges from 4 to 12.**

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